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(71) Applicant  
Clive Ian Pratt,  
C/o Allied Medical Group  
Limited,  
Ruweis,  
P O Box 2431,  
Abu Dhabi,  
United Arab Emirates

(72) Inventor  
Clive Ian Pratt

(74) Agent and/or  
Address for Service  
Mewburn Ellis and Co.,  
2/3 Cursitor Street,  
London EC4A 1BQ

(54) Medical cannula location device

(57) A medical cannula location device comprises a plate (14) with a central aperture (16) through which the cannula passes. The plate is secured to the patient's skin and the cannula (10) emerging from the aperture is secured to the distal face (23) of the plate. The mouth of the aperture is rounded to merge with the distal surface to prevent kinking of the cannula. A slot (18) extends radially from the central aperture to the edge of the plate to allow the cannula to be introduced radially into the central aperture.

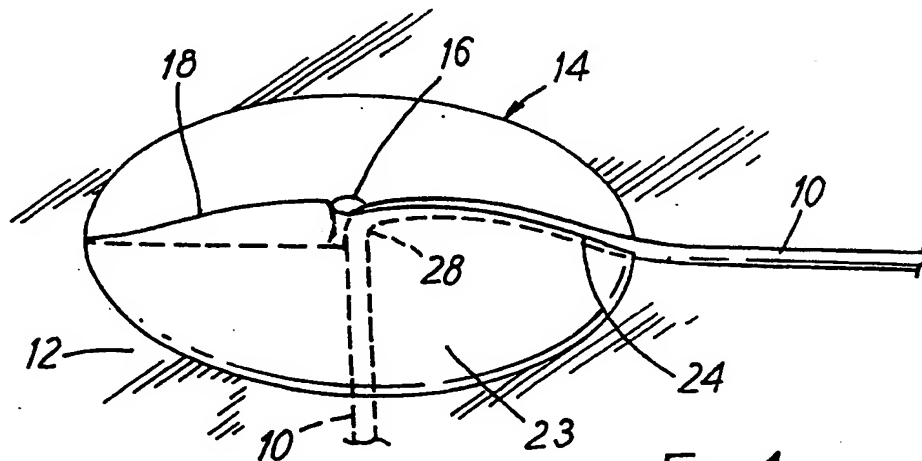


FIG. 1

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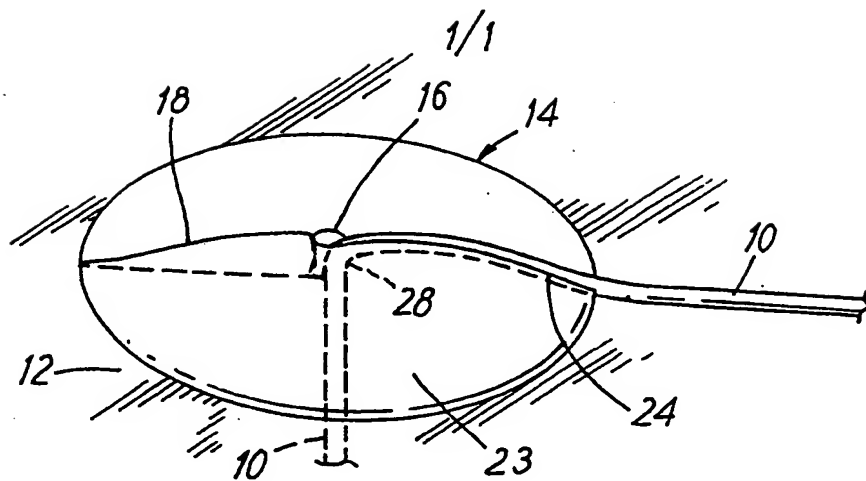


FIG. 1

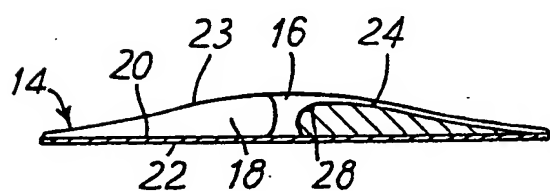


FIG. 2

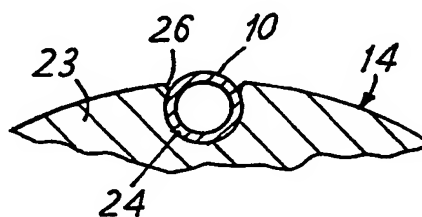


FIG. 3

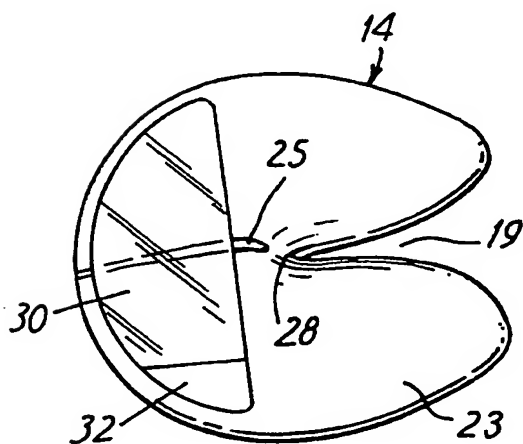


FIG. 4

## SPECIFICATION.

### Medical cannula location device

5 This invention relates to the field of surgery, and more particularly to the use of cannulae inserted through the skin of patients.

10 Cannulation of various parts of the body is commonplace in medical practice. In particular cannulation of the epidural space is used to introduce local anaesthetic next to the spine, to produce pain relief. This is especially useful during childbirth.

15 The cannula is introduced via a needle inserted, for example in the lumbar region, and one in place, the needle is removed. The cannula must then be fixed in position by attachment to the skin.

20 The actual fixation is achieved by various different means by different doctors, and none is entirely satisfactory. The cannula is not usually well fixed and may become displaced. Kinking and subsequent blockage of the cannula may occur. Inspection of the cannula is difficult. Adjustment of the cannula position is often time consuming.

25 It is therefore desirable to provide an easy, cheap, and effective way of locating the cannula.

30 According to the present invention there is provided a cannula location device comprising a plate having an aperture through it or slot extending into the plate from one edge thereof, one face being intended to contact the skin of the patient and preferably carrying an adhesive so that it can be adhered to the skin, said aperture or the inner end of said slot as the case may be being rounded to merge with the other face of the plate and thereby provide a support to enable the flexible cannula extending from the skin to be curved without kinking into a position in which it lies on said other face of the plate and can be secured thereto.

35 The plate preferably has means for releasably securing the cannula on said other face of the plate. Said securing means may take the form of a channel with a restricted mouth, whereby the cannula can be pressed in the channel and retained therein by the restricted mouth. Alternatively the securing means 40 may take the form of a patch peelably and readherably secured to the plate so that it can be pressed onto the plate over the cannula to hold it in place. The patch may have an edge portion which is not adhered to the plate, thereby providing a tab to facilitate peeling away of the patch. The surface of the plate under the patch may have a shallow groove extending from said aperture or slot to provide a seating for the cannula.

45 The plate is preferably of transparent material with transparent adhesive and, where present, a transparent patch. The plate is preferably of resiliently flexible (semi-rigid) material. The adhesive on said one face of the plate is preferably protected by peelable sheet material prior to use.

50 In order that the invention may be more clearly understood, various embodiments will now be described with reference to the accompanying drawings, wherein:

55 Fig. 1 shows a perspective view of one embodiment of cannula location device in use;

Fig. 2 shows a cross-sectional side view through the plate of Fig. 1;

Fig. 3 shows an enlarged cross-sectional view through the surface groove on the plate; and

70 Fig. 4 shows a perspective view of a second embodiment of cannula location device in use.

Referring to the drawings and firstly to Figs. 1 to 3; the cannula 10 is introduced into the patient's skin 12 in conventional manner. A plate 14 of transparent flexible moulded plastics material is then fitted onto the cannula. In the embodiment shown, the plate has a central aperture 16 from which a slit 18 extends radially to the edge of the plate. Because the plate is of resilient flexible material it can be opened at the slit to receive the cannula and allow it to enter the central aperture 16. The surface 20 of the plate nearest the patient's skin is flat and carries a layer 22 of transparent pressure-sensitive adhesive capable of peelably adhering to the skin. Prior to use this adhesive layer is covered by a protective sheet, such as silicone treated paper, which is peeled away so that the plate, fitted to the cannula, can be slid along the cannula until the surface 20 contacts the skin and is held there by the adhesive 22. Then the cannula is flexed over and pressed into a channel 24 which extends on the top surface 23 radially from the aperture 16 to the edge of the plate in the direction remote from the slit 18. As seen in Fig. 3 the channel has a restricted mouth 26 which opens resiliently to allow insertion of the cannula and thereafter releasably retains the cannula in the channel. The top surface 23 of the plate is convex so that it has its maximum thickness in the region of the aperture 16 and tapers to zero or very small thickness at the edge. As can be seen from Fig. 1, the surface 28 of the aperture 16 leading to the channel 24 is curved so as to merge with the channel, thereby providing a rounded support for the cannula.

Thus the cannula is held firmly in position, gripped by the resilient channel 24 and prevented from kinking by the support surface 28. The position of the cannula can be adjusted by peeling it out of the channel and then pressing it back in after adjustment. After fixing the cannula to the plate clear adhesive tape can be applied over the plate, cannula and surrounding skin to secure the assembly better. The plate does not have to have the slit 18. Instead, the cannula could be threaded through the aperture 16 and the plate slid down the cannula into contact with the skin.

Referring to Fig. 4; in place of the slit 18 and aperture 16 the plate 14 has a broad funnel-shaped slot 19 narrowing towards the centre of the plate. The inner, narrow, end of the slot has the smoothly rounded surface 28 to support the cannula. The convex top surface 23 of the plate has a shallow groove 25 extending radially in the direction away from the slot 19. The groove and adjacent region of the surface 23 are covered by a patch 30 of transparent plastics material peelably adhered by a transparent pressure-sensitive adhesive. the under-surface of the plate is likewise flat and is provided with an adhesive layer.

This embodiment is used in much the same way as the embodiment of Figs. 1 to 3. However, the

funnel shaped slot makes the plate easier to fit to the cannula. The patch 30 is peeled away from the surface 23 of the plate, and after the cannula is laid in the groove 25 it is replaced and readhered to secure the cannula. It can easily be peeled away again to adjust the position of the cannula. An end portion 32 of the patch 30 can be left free of adhesive to form a tab facilitating the manual peeling away of the patch.

The location device of the present invention can be used in any situation where a cannula or solid tube which exists from the skin may require fixation. Examples might include central venous lines, chest drains, peritoneal drains, arterial lines etc. The plate, optionally with the cannula, can be presented in a sealed sterile or sterilisable package. It is cheap enough to be disposable after one use.

#### CLAIMS

1. A cannula location device comprising a plate having a proximal face for contacting the skin of a patient and a distal face opposite the proximal face, the plate having also aperture means extending through the plate from the proximal to the distal faces thereof, the mouth of the aperture at the distal face end being rounded so as to merge with the distal face and thereby provide a support to enable a flexible cannula extending from the skin to be curved without kinking into a position in which it lies on the distal face and can be secured thereto.

2. A cannula location device according to claim 1 wherein the plate has a slot extending radially from said aperture means to an edge of the plate to allow the cannula to be introduced into the aperture means radially from said edge.

3. A cannula location device according to claim 2 wherein the plate is made of resilient material, and said slot is normally closed but can be opened to receive the cannula by resilient distortion of the plate.

4. A cannula location device according to claim 2 wherein said slot is a permanently open slot which broadens to a greater width at said edge, whereby the entry of the cannula from said edge is facilitated.

5. A cannula location device according to any one of the preceding claims wherein said distal surface of the plate is provided with a channel extending generally radially from said aperture means to receive the cannula, the channel having a restricted mouth so that the cannula can be resiliently pressed into the channel and be retained therein by the restricted channel mouth.

6. A cannula location device according to any one of the preceding claims wherein the distal face of the plate is provided with a patch which is peelably and readherably secured to said distal face so that it can be pressed over the cannula to secure it in place.

7. A cannula location device according to claim 6 wherein an edge portion of the patch is not adhered to the plate and thereby constitutes a tab facilitating peeling away of the patch.

8. A cannula location device according to claim 5 or claim 6 wherein the distal surface of the plate under the patch has a groove extending generally radially from said aperture means to provide a seating for the cannula.

9. A cannula location device according to any one of the preceding claims wherein the proximal surface of the plate is provided with an adhesive so that the plate can be adhered to the skin.

10. A cannula location device according to claim 9 wherein the adhesive on the proximal surface is initially covered by a protective layer which can be peeled away in use to expose the adhesive.

11. A cannula location device substantially as described herein with reference to the drawings.

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